

Possibility of industrial application

The ball table of the present invention can support plate-shaped transported material in a clean room, in which the attachment of metal powder or other foreign matter that is difficult to wash off later in the process should be prevented, and can easily adjust the position of the transported material.

Claims

1. A ball transfer unit characterized by the following facts: the ball transfer unit has a main body having a seat surface recessed in a semispherical shape, multiple small balls rollingly in contact with the seat surface of the main body, a large ball rollingly in contact with the multiple small balls, and a cover installed on the main body to hold the large ball and to hold small balls between the large ball and the seat surface of the main body;

With at least the aforementioned main body and the aforementioned large ball being made of any material selected from PAI, PBI, PCTFE, PEEK, PEI, PI, PPS, melamine resin, aromatic polyamide resin, aluminum oxide, zirconium oxide, and silicon nitride.

2. The ball transfer unit described in Claim 1, characterized by the fact that the Rockwell hardness H_{RR} of the aforementioned main body, small balls, and large ball is 75 or larger.

3. The ball transfer unit described in Claim 1, characterized by the fact that the thermal deformation temperatures of the aforementioned main body, small balls, and large ball measured according to test standard ASTM D648 are all 120°C or higher.

4. The ball transfer unit described in any of Claims 1-3, characterized by the fact that the aforementioned small balls are made of the same material as the aforementioned large ball or main body.

5. The ball transfer unit described in any of Claims 1-3, characterized by the fact that the ball transfer unit is made of a single material.

6. The ball transfer unit described in Claim 5, characterized by the fact that the single material is PBI, PEEK, or PI.

7. The ball transfer unit described in any of Claims 1-3, characterized by the fact that the aforementioned small balls are made of stainless steel.

8. The ball transfer unit described in any of Claims 1-7, characterized by the following facts: the aforementioned main body also has an annular groove formed on its outer peripheral surface; the conventional cover has a cylindrical part fit to encircle the outer peripheral surface of the main body and an annular securing part that is capable of elastic deformation in the radial direction and is formed on the inner circle at the bottom of the cylindrical part to fit in the annular groove; and the internal diameter of the securing part is set to be smaller than the outer diameter of the main body.

9. The ball transfer unit described in any of Claims 1-8, characterized by also having a through hole that penetrates through the main body and has its one end opened on the aforementioned seat surface.

10. A ball table used for supporting a transported material characterized by having multiple ball transfer units described in any of Claims 1-7 and a support part whereon the ball transfer units are fixed at prescribed intervals.

11. The ball table described in Claim 10, characterized by the fact that the transported material is a semiconductor wafer or glass substrate for a flat panel display.